"Should I go on dialysis, Doc?"

Initiating dialysis in elderly patients with end-stage renal disease

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Mr K., an 83-year-old man with chronic kidney disease, coronary artery disease, mild chronic obstructive pulmonary disease, and type 2 diabetes mellitus, was recently admitted to hospital with a 2-month history of fatigue, decreased appetite, weight loss, pruritus, and dyspnea secondary to congestive heart failure not responding well to diuretics. You visit Mr K. and his family in the hospital and notice that his most recent bloodwork results show a creatinine level of 420 µmol/L, a urea level of 34 mmol/L, and creatinine clearance of 14 mL/min/1.73 m^2. You see that the nephrology team has completed their consultation and has spoken to the family about dialysis.

End-stage renal disease (ESRD), also known as *stage-5 chronic kidney disease*, correlates to creatinine clearance of below 15 mL/min/1.73 m^2 and often requires dialysis (also known as *renal replacement therapy*) or transplant.[1] In Canada, as in the rest of the world, the ESRD population is growing and aging rapidly. In 2007, there were approximately 35265 Canadians with ESRD, a 70% increase since 1998. Twenty-eight percent of ESRD patients in 2007 were older than 75 years of age, compared with only 12.6% in 1998.[2] The management of ESRD has also become more aggressive among the elderly. Fifty-four percent of ESRD patients initiating dialysis in 2007 were older than 65 years of age, compared with 48% in 1998.[3] In the United States, the highest proportion of patients starting hemodialysis is among those older than 75 years of age, and this has more than doubled since 1997.[4]

Dialysis discussion

When you visit with Mr K. and his family, they seem overwhelmed and look to you for some guidance. They are wondering, "Is dialysis worth it?"

Although dialysis can extend life, there is substantial mortality associated with it: 25% at 1 year and 60% at 5 years.[5] Dialysis can affect quality of life by causing fatigue, fluctuating blood pressures, problems with vascular access, infection, etc. There is also considerable time investment, including getting to and from dialysis and the actual time spent receiving dialysis. The aging ESRD population is often frail and has multiple comorbidities,[6-8] which can make the hardships of dialysis more pronounced and the risk of complications greater. As a result, elderly patients with substantial comorbidities (especially ischemic heart disease) might derive only limited survival benefits from dialysis.[8-10] In contrast, those who choose a conservative approach can live months to years (range 6.3 to 23.4 months),[9] highlighting the difference between withdrawal of dialysis, which leads to imminent death, and choosing conservative management when diagnosed with ESRD. Those who choose the nondialysis option often have preserved function until late in the illness, with a precipitous decline in the final month of life.[11] Moss and colleagues[12] described using the "surprise" question, "Would you be surprised if this patient were to die in the next 12 months?" This clinical tool was found to be effective in identifying patients with higher morbidity scores and lower functional status, and who were 3.5 times more likely to die within a year despite receiving dialysis.

Mr K. and his family are thinking about the fact that he might live longer if he receives dialysis, but given his heart failure, the survival benefit might not be great. Mr K. is distressed by the thought of having to go to and from the hospital 3 times a week for hemodialysis and of spending hours hooked up to the dialysis machine. He loves going to his cottage for 4 or 5 days at a time in all seasons and does not want to give that up yet, especially if his functional status might be preserved until the last month of his life. He is also very concerned about being a burden to his family.

There are many reasons that patients might decide to not start dialysis, including advanced age, not wanting to travel to the hospital 3 times a week, not wanting to be a burden, and not wanting to risk feeling unwell with dialysis.[13] Physicians should explore these concerns when discussing the initiation of dialysis and be sure to raise the issue of advance care planning. It is common for physicians to avoid such discussions believing that patients are not ready; however, most patients do want physicians to initiate these discussions.[14] Patients report that their end-of-life priorities include family education and support, as well as attention to pain and symptom management.[15] Most patients have already considered end-of-life options before physicians raise the topic, and these discussions can actually enhance rather than diminish hope.[16]

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These discussions should clearly explain the option of a conservative, palliative approach as an alternative to the "default" pathway of dialysis. One study found that 63% of patients who chose to start dialysis regretted the decision, and 52% stated they initiated dialysis owing to the "doctor's wish."[15] Often, patients with ESRD are treated with dialysis until days before death, dying in hospital without being seen by a palliative care team or receiving adequate symptom control.[17]

Pain and symptom management

You speak with Mr K. and his family openly and honestly about what to expect with or without dialysis. Mr K. is fairly certain that he does not want to start dialysis. His wife suddenly looks very concerned and asks, "But will he suffer? Will he have pain?"

Murtagh and colleagues report that in the last month of life, ESRD patients who are managed conservatively experience symptoms that are as substantial as patients with end-stage cancer.[18] There are no studies that compare symptoms between elderly patients receiving dialysis and those who choose conservative management; however, quality of life is comparable in the 2 groups.[9] Although it is beyond the scope of this article to address each symptom and its management in detail, it is essential to note that all symptoms can be addressed through a comprehensive palliative approach to assessment and treatment.

Pain, which has various potential causes, is highly prevalent in ESRD for both dialysis and conservatively managed patients and greatly affects their quality of life.[5,6,18-23] Opioids are the mainstay of pain and dyspnea management, but the overall quality of data on opioids in renal impairment is poor. Physicians should be concerned about the accumulation of both the parent drug and its metabolites. Morphine's main active metabolite (morphine-6-glucuronide) and assumed inactive metabolite (morphine-3-glucuronide) both accumulate in patients with renal impairment and are responsible for toxic effects.[24,25] Hydromorphone's main metabolite is hydromorphone-3-glucuronide, which also accumulates in patients with renal impairment and might cause neural toxicity in humans. This might be avoided with lower doses used for shorter durations.[24-26] Clinical experience seems to suggest that hydromorphone and oxycodone might be safer to use than morphine in renal impairment. They both have metabolites that accumulate in those with renal impairment, but the significance of these metabolites is less clear than it is for morphine-3-glucuronide and morphine-6-glucuronide. Methadone and fentanyl do not appear to have clinically significant metabolites, and therefore might be the safest medications to use in renal impairment[24]; however, many physicians are uncomfortable prescribing these medications owing to the drugs' complicated pharmacokinetics and their own lack of experience. In general, given our current level of understanding of opioids in renal failure, adopting a "start low and go slow" approach, and consulting published references regardless of the opioid prescribed, is recommended.[24-30] For neuropathic pain, gabapentin and pregabalin can both be used in adjusted doses[27,30] and have fewer side effects than tricyclic antidepressants. **Table 1** shows suggested starting doses for common medications in elderly patients with ESRD.

Table 1. Suggested starting doses for common medications in elderly patients with end-stage renal disease

MEDICATION	STARTING DOSE*	FREQUENCY
Pain or dyspnea		
• Immediate-release hydromorphone	0.5 mg orally or 0.25 mg subcutaneously	Every 8-12 h standing dose, and every 2 h as needed
• Morphine	2.5 mg orally or 1.5 mg subcutaneously	Every 8-12 h standing dose, and every 2 h as needed
• Oxycodone	2.5 mg orally	Every 12 h standing dose, and every 2 h as needed
• Fentanyl	Should never be started in an opioid-naïve patient	
Neuropathic pain		
• Gabapentin	100 mg orally	Daily (up to a total daily dose of 300 mg)
• Pregabalin	25 mg orally	Daily (up to a total daily dose of 100 mg)
Delirium or nausea		
• Haloperidol	0.5-1 mg orally or subcutaneously	Every 3 h as needed. If standing dose needed, every 12 h
• Methotrimeprazine	2.5-6.25 mg orally or subcutaneously	Every 3 h as needed. If standing dose needed, every 12 h
• Olanzapine	2.5-5 mg orally, sublingually, or subcutaneously	Every 8 h as needed. If standing dose needed, then daily
Pruritus		
• Paroxetine	5 mg	Daily at bedtime
• Mirtazapine	7.5 mg	Daily at bedtime

*These suggested starting doses are based on the authors' (D.S. and J.D.) experience.

Mr K.'s pain and breathlessness are well controlled with small doses of hydromorphone. His wife now asks you about some agitation Mr K. is having at times, especially at night. He has tried to climb out of bed and has had a fall. Despite rotating his opioid to fentanyl, his agitation persists. You think that his delirium is likely multifactorial.

Delirium is a very common symptom for patients with advanced illness[31] and can be very distressing to patients and their loved ones. Physicians might worry about using antipsychotic drugs in the frail elderly with ESRD, but haloperidol has minimal urinary excretion and is likely safe. There are very limited data for other antipsychotic drugs, such as methotrimeprazine, olanzapine, or quetiapine.[32,33] As with opioids, the recommendation to "start low and go slow" applies. These same medications in similar doses can be used for nausea, which is another common symptom in ESRD.

You start Mr. K on a small dose of haloperidol at 1 mg subcutaneously twice a day and 0.5 mg every 3 hours as needed, and his agitation improves. He is now mostly bothered by itching: he cannot help scratching all the time.

Pruritus can occur in both those receiving and those not receiving dialysis,[18,34] and it has a strong adverse effect on quality of life.[35] The cause remains unknown but there are many possible contributing factors. Dry skin is common and can be treated with emollients.[34,36] Serotonin receptors are more important than histamine for ESRD pruritus,[37] so mirtazapine[38] and paroxetine[39] are more helpful than antihistamines. Gabapentin and pregabalin have also been shown to be helpful, especially when given after dialysis[40]; however, the mechanism of action is unclear. (Visit **www.cfp.ca/content/57/9/1010.full.pdf+html** to read an article on pruritus in palliative care.[41])

Regular use of emollients and a small dose of paroxetine have a dramatic effect on Mr K.'s pruritus and overall well-being. Eventually he is discharged home, where you are able to care for him in collaboration with community nursing for the next 6 months until he dies peacefully.

BOTTOM LINE

- Patients might decide to not start dialysis for reasons such as advanced age, not wanting to travel to the hospital 3 times a week, not wanting to be a burden, or not wanting to risk feeling unwell with dialysis. Physicians should explore these concerns when discussing the initiation of dialysis and raise the issue of advance care planning.
- Patients with end-stage renal disease are often treated with dialysis until days before death, dying in hospital without being seen by a palliative care team or receiving adequate symptom control.
- All symptoms of end-stage renal disease can be addressed through a comprehensive palliative approach to assessment and treatment.

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Competing interests
None declared

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